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The isolated quantum group of the GL_2 family

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ABSTRACT

Quantum analogs of GL(2) are parameterized by PGL(2)-orbits in the commuting variety of the projective linear group PGL(2). The quantum group corresponding to the orbit constituting the second connected component of the commuting variety has previously received little attention. This paper investigates ring-theoretical properties of its coordinate ring.

Introduction

A basic idea going back to Manin [18] is to interpret a quantum group of the general linear type in terms of the Hopf algebra H universally coacting on a pair of quadratic graded algebras. It can be assumed that the two graded algebras have the same vector space V as the degree 1 homogeneous component generating each of them, and then the defining relations in the algebras are given by 2 vector subspaces $U, U' \subset V^{\otimes 2}$. These algebras are regarded as the quantum symmetric algebra and the quantum Grassmann algebra, and one expects that their Hilbert series should be exactly the same as in the

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